

CLAIMS

1. A cleaning system for removing an amount of residual material from a liquid
dispensing needle or pin, the system comprising:
5 a container assembly having at least one orifice;
a vacuum source operatively connected to the container assembly wherein the vacuum
source creates an airflow through the at least one orifice into the container assembly; and
a control system that positions the liquid dispensing needle or pin relative to the at least
one orifice in the container assembly wherein the residual material is removed from the
10 dispensing needle or pin by the airflow.

2. The cleaning system as claimed in claim 1 wherein the residual material is removed
from the dispensing needle or pin without contact between the dispensing needle or pin and the
container assembly.

3. The cleaning system as claimed in claim 1 wherein the container assembly further
includes a disposable cup for collecting an amount of removed residual material.

4. The cleaning system as claimed in claim 1 wherein the container assembly further
20 includes a tube for directing the airflow towards the bottom of the disposable cup.

5. The cleaning system as claimed in claim 1 wherein the container assembly includes a
plurality of various diameter orifices to accommodate a variety of various gauge dispensing
needles or pins.

25 6. The cleaning system as claimed in claim 5, wherein the vacuum source may be
coupled with one or more of the plurality of different diameter orifices whereby an airflow is
created through the one or more of the plurality of different diameter orifices into the container
assembly.

7. The cleaning system as claimed in claim 5 wherein the container assembly further includes a disposable cup for collecting an amount of removed residual material.

5 8. A cleaning system for removing an amount of residual material from a liquid dispensing needle, the system comprising:
a container assembly having an iris-type shutter having a variable diameter opening;
a vacuum source operatively connected to the iris-type shutter wherein the vacuum source creates an airflow through the variable diameter opening and into the container assembly;
and a control system that positions the liquid dispensing needle or pin relative to the iris-type shutter such that the airflow through the variable diameter opening causes the removal of the residual material from the dispensing needle or pin .

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9. The cleaning system as claimed in claim 8 wherein the diameter of the variable diameter opening of the iris-type shutter may be increased or decreased to accommodate a variety of different gauge dispensing needles or pins.

10. The cleaning system as claimed in claim 9 wherein the control system operatively controls the diameter of the variable diameter opening of the iris-type shutter.

20 11. The cleaning system as claimed in claim 10 wherein the container assembly further includes a disposable cup for collecting an amount of removed residual material.

12. A self-cleaning liquid dispensing system comprising:
means for receiving a liquid from a liquid source;
25 means for dispensing the liquid through a needle or pin onto a medium; and
means for removing an amount of residual material from an exterior portion of the needle or pin without contacting the needle or pin.

30 13. The self-cleaning liquid dispensing system as claimed in claim 12 wherein the means for removing residual material includes a cleaning system comprising:
a container assembly having at least one orifice;

a vacuum source operatively connected to the container assembly wherein the vacuum source creates an airflow through at least one orifice into the container assembly; and

means for operatively positioning the liquid dispensing needle relative to the at least one orifice wherein the residual material is removed from the dispensing needle or pin without contact between the dispensing needle or pin and the orifice.

14. The liquid dispensing system as claimed in claim 12 wherein the means for operatively positioning the liquid dispensing needle or pin relative to the orifice includes a computer control system.

15. A self-cleaning liquid dispensing system comprising:
at least one dispensing needle or pin;
a cleaning system including at least one vacuum source for operatively removing residual material from the exterior of the at least one dispensing needle or pin; and
means for operatively positioning the at least one dispensing needle or pin relative to a vacuum source.

16. The self-cleaning liquid dispensing system as claimed in claim 15, wherein the cleaning system further comprises at least one container assembly.

17. The liquid dispensing system as claimed in claim 16, wherein the at least one container assembly further comprises at least one orifice for receiving an end of a dispensing needle or pin.

18. The liquid dispensing system as claimed in claim 17, wherein the container assembly includes a plurality of various diameter orifices.

19. The liquid dispensing system as claimed in claim 17, wherein the container assembly includes at least one adjustable diameter orifice.

20. The liquid dispensing system as claimed in claim 17, claim 18 or claim 19, wherein at least one vacuum source is coupled with at least one container assembly such that the vacuum source causes a stream of air to flow through an orifice and into the container assembly.

5 21. A method for cleaning residual material from a dispensing needle or pin in a liquid dispensing system comprising the steps of:
supplying at least one container assembly having at least one orifice;
positioning the needle or pin relative to the at least one orifice; and
supplying a vacuum source for creating an airflow through the orifice and into the
10 container assembly wherein the airflow causes residual material to be pulled from the dispensing needle or pin.

15 22. The method for cleaning residual material from a dispensing needle or pin in a liquid dispensing system as claimed in claim 21 wherein the residual material is removed from the dispensing needle or pin without contact between the dispensing needle or pin and the orifice.

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